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Implant Maintenance Procedures

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Implant therapy is a treatment that has rapidly become both state of the art and a standard of care. There is, therefore, an increased need for proper professional maintenance of these implants. As a part of the annual dental examination it is essential to assess the condition of implant fixtures and restorations, and to provide the appropriate maintenance.

There are a variety of different types of implant restorations. These include single or multiple tooth, removable or fixed, and cemented or screw retained. While procedures may differ slightly based upon the type of restoration, several basic principles can be applied regardless of the type of restoration.

Examination procedures

A general assessment of oral hygiene and soft tissue health is similar to the requirements for natural teeth. Accumulations of plaque or debris around implant restorations should be noted and the patient instructed in methods of proper oral hygiene. An assessment of the character and presentation of the periimplant soft tissues should be recorded, noting areas that are red, inflamed, or bleeding. Tissues should be well adapted to the implant restoration. Gentle periodontal probing using a plastic probe should be accomplished for evidence of disease. Of particular concern are any areas that show evidence of purulence.

Verify the stability of the restoration. Any mobility noted is an indication of an emergent problem. The most common cause of mobility is a loose screw (see below). Verify that the restoration is in implant-protected occlusion. Implant protected occlusion is achieved when the occlusion on the implant restoration provides only a very light drag or resistance to shim-stock in maximum intercuspation with a clenching force applied. There should be no excursive contacts on the implant restoration. Make any appropriate adjustments to the occlusion.

Radiographic evaluation

Annually, a radiographic assessment should be made to monitor the crestal bone levels (1). Care must be taken to ensure proper parallelism of the x-ray beam is attained. The beam should be aligned perpendicularly to the implant fixture. The threads should be distinctly visible on the radiograph. A comparison should be made with any previous radiographs. Any area of radiolucency around the implant fixture is an obvious area of concern. Initial bone loss can be expected to be near the level of the first thread. Additional bone loss of approximately 0.1 mm per year for the first five years (up to a total of 1.5mm) is considered normal (2). Complete seating of the associated parts (abutment and/or restoration) should also be verified from the radiograph.

Maintenance procedures

If a dental prophylaxis is indicated, only plastic instruments should be used to scale around implant fixtures and restorations. Metal instruments, ultrasonic scalers, or prophy jets must NOT be used to clean implants. They may scratch or damage the titanium fixtures and abutments. Polishing is performed with a standard prophy angle, rubber cup, and fine prophy paste.

Evaluate the restoration for overall integrity. For the removable prosthesis utilizing a bar, ensure that the attachment mechanisms are intact and retentive. Any lost or broken retentive elements in the prosthesis may either be processed as a conventional prosthodontic repair, or referred to a command prosthodontist. A soft reline material can be used as an interim/provisional repair if a referral is deemed necessary.

Bars may be removed and cleaned in an ultrasonic cleaner. Clean and polish, but do not remove the abutments. Check the abutments for tightness, verifying proper torque (usually 20 Ncm.), prior to replacement of the bar. Use new prosthetic retaining screws when replacing the bar. Tighten the prosthetic retaining screws (usually to 10 Ncm). If removal of the bar is not indicated or desired, it can be

cleaned intraorally with a standard prophy angle and fine prophy paste.

Implant emergency procedures

The most common implant emergency is a loose screw. A loose single tooth restoration is a true emergency, as rotation of the restoration can damage the hex on the fixture. If the restoration is a screw-retained restoration, it will be necessary to remove the restoration that seals the screw access hole. Screw access holes are usually sealed with a layer of composite resin placed over a gutta percha or silicone plug, and a small cotton pellet. Carefully drill through the resin and remove the gutta percha or silicone plug to expose the screw. Select the appropriate hand screwdriver (square, hex, star or slotted) and check for screw looseness. If the screw is fractured, it will be necessary to carefully tease out the fractured portion of the screw by using an explorer and attempting to turn the broken component in a counterclockwise direction. If a new screw is available, replace the screw, radiographically verify the restoration is fully seated, and tighten to the appropriate torque. (Hand tighten with the appropriate hand screwdriver if no torque controller is available and refer to the command prosthodontist for final torque). For temporary reinsertion, refill the access with a small cotton pellet and polyvinylsiloxane impression material. For long-term reinsertion, reseal the access with a small cotton pellet over the head of the screw, followed by warm gutta percha, and 1-2 mm of composite resin. To access the screw of a cemented restoration, attempt to carefully tap off the restoration with a crown remover. If unable to remove the restoration, it will be necessary to drill an access hole through the occlusal surface (for posterior teeth) or lingual surface (for anterior teeth). Then remove the restoration, check for screw looseness (as above), retorque the screw and repair the restoration when possible. Alternatively, a provisional restoration may be fabricated and cemented with a small amount of Dycal® or temporary cement. Always verify the restoration is in implant protected occlusion as stated above prior to dismissing the patient.

Failing implants

Clinical findings of concern would include soft tissue swelling, bleeding and tenderness on probing, purulence, and tenderness on percussion. The presence of these findings is an indication that the implant may be failing. Additionally, a radiographic finding of significant bone loss may characterize a failing implant (3). Attempt to identify possible factors which may be contributing to the failure such as poor hygiene or improper occlusion, take corrective action as necessary, and refer the patient for a consultation with the command implant coordinator. If clinical findings include fixture mobility, it is an indication of a failed implant, and the patient likewise should be referred to the command implant coordinator for removal of the implant.

As the patient population having dental implants increases, the skills, knowledge, and equipment necessary to deal with normal maintenance and potential problems also must grow. A PowerPoint slide presentation with more detailed information is available on the Internet at http://nnd40.med.navy.mil/navypros/implant-maintenance.ppt.

References:

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